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**REMARKS**

Claims 11-27 are pending in the present application after this amendment adds new claims 14-27. The specification is amended to correct a typographic error. The amendments do not add new matter, and find support throughout the specification and figures. In particular, the new claims are supported in the specification at paragraphs 0056, 0057, and 0066 of the published application and by original claims 1-10. In view of the amendments and the following remarks, favorable reconsideration of this application is respectfully requested.

The Examiner asserts that the Information Disclosure Statement (IDS) filed on November 18, 2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. This application is a divisional of the parent application which has now issued as United States Patent No. 6,982,720. As this is a divisional application, the Examiner has an obligation take into consideration the references cited in the parent case. Applicants therefore respectfully request that the references in the IDS filed on November 18, 2003 be considered and that an initialed PTO form 1449 be provided to the Applicant in the next Office communication.

Claims 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Publication No. 2002/0027559 to Wood (hereinafter referred to as Wood). Applicants respectfully traverse.

Claim 11 relates to an image generation circuit that includes, *inter alia*, a preprocessing portion operably coupled to receive primitive parameters and produce pixel information, and a *pixel engine* operably coupled to the preprocessing portion which receives the pixel information and *calculates intermediate data from the pixel information*. Claim 11 also includes a memory

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operably coupled to the pixel engine which stores the intermediate data. In the image generation circuit of claim 11, *the pixel engine reads the intermediate data from the memory and calculates a final data from the fed-back intermediate data.*

A feature of claim 1 of the application is that the pixel engine receives pixel information, calculates intermediate data from the pixel information, and calculates a final data from the intermediate data which is fed-back. This feature is discussed in figure 14, which shows the series of processing steps by which an image may be generated using basic texture (Specification; page 15, line 3 to page 16, line 7). At step 1, the pixel engine 6 reads a basic texture. At step 2, the pixel engine 6 confirms whether drawing of all polygons to be drawn has been completed. If the drawing is not complete, at steps 3 to 6 are performed to determine the pixel values, and then at step 7 the pixel engine draws the pixel values to frame buffer 8. Then the flow proceeds back to step 2 to determine again if the drawing has been completed. If the drawing is completed, the flow proceeds to step 21 of figure 15.

Wood apparently discloses a circuit arrangement and display apparatus for use in 3-D graphics in which 2-D texture maps stored at different resolutions in pyramidal array are indexed by a pair of texture coordinates and an associated level coordinate (L) (abstract). In Wood, "[t]o draw or render a primitive, the CPU 14 (or the special hardware 26) causes registers within the DPU 28 to be loaded, via the bus 18, with values defining a single primitive (for example in terms of vertex coordinates, edge slope, and so on) and its various attributes – color, reflectance and so forth" (Wood; para. 0024). Wood provides detailed modulation, and to facilitate the introduction of depth cueing to an image, a mapping hardware is provided to supply modulation values MOD (Wood; para. 0025). The DPU 28 in Wood generates a pair of texture coordinates U and V simultaneously with each pair of pixel (display) coordinates X and Y so that the texture

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coordinates U and V are processed within the mapping hardware and applied to the texture memory 41 so that a modulation value MOD is available for each pixel location X, Y being addressed. The modulation value MOD commonly comprises a color value. The modulation values MOD are used by the DPU 28 together with other parameters to modify the pixel values COL less directly (Wood; para. 0027).

The Examiner asserts that the mapping hardware of Wood supplying the modulation values corresponds to the pixel engine of the present application reading the intermediate data from the memory. The Examiner further asserts that the DPU 28 of Wood generating pixel coordinates COL from modulation values MOD that has been fed back into the DPU 28 corresponds to the pixel engine of the present application calculating a final data from the feedback intermediate data (Office Action; page 4, lines 2 to 6).

However, MOD is apparently produced by mapping hardware (Wood; para. 0025). The MOD of Wood is available for each pixel location X, Y, and then is used within the DPU 28 together with other parameters to modify the pixel values COL (Wood; para. 0027). As Wood states:

The texture coordinates U and V are processed within the mapping hardware in a manner to be described below and applied to the texture memory 41 so that a modulation value MOD is available for each pixel location X,Y being addressed. *The value MOD commonly comprises a color value*, and in principle it could directly form the pixel value COL and be fed directly into the display memory (VRAM) 30, as shown by the dotted data path 42. More commonly, however, even if the values MOD are color values, they will require to be modified within the DPU 28 to allow for realistic lighting effects. In a more general case, *the modulation values MOD are used within the DPU 28 together with other parameters to modify the pixel values COL less directly*.

(Wood; para. 0025; emphasis added). However, a color value, as MOD is as discussed above, does not disclose or suggest pixel information produced from primitive parameters. The MOD is

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taken using some parameters, but is not used as any intermediate data produced by a pixel engine. More importantly, Wood does not suggest that the *MOD is used as intermediate data* or that the *MOD is again input into (or fed-back to) the DPU 28 to take a final data*. Thus, clearly Wood does not suggest that the MOD is fed-back into the DPU 28. Furthermore, *MOD is not calculated from any intermediate data* and does not consist of pixel information. Therefore, for at least these reasons, MOD does not disclose or suggest intermediate data as recited in claim 11.

In contrast, the pixel engine of the present application receives pixel information and calculates intermediate data from it. Then the intermediate data is *fed-back* from the output of the pixel engine to the input of it to calculate final data from the intermediate data which has been fed-back. Wood discloses mere texture mapping performed by the texture memory 41 and the DPU 28, but *does not disclose or suggest any feedback operation of intermediate data to calculate a final data*.

Furthermore, MOD is the only apparent input into DPU 28 that could possibly be part of a feedback loop, as is apparent from figure 1 of Wood. Therefore, no other inputs shown in Wood disclose or suggest intermediate data produced by a pixel engine, stored in a memory, and input into the pixel engine for producing final data, as recited in claim 11. Wood does not disclose or suggest intermediate data as recited in claim 11, and therefore Wood does not anticipate claim 11.

The Examiner also asserts that Wood inherently teaches an image generation circuit performing storage and feedback of intermediate data as he teaches an apparatus including a memory for receiving an offset value that corresponds to a stored texture map data at a level offset from an original texture map level where each offset map is retrieved and feedback to a component of the apparatus to generate final pixel values for display (Office Action; page 4,

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lines 6 to 11). However, as stated above, Wood does not disclose or suggest any feedback operation of the MOD.

Claim 12 includes a feature similar to that discussed above in regard to Wood as applied against claim 11, and therefore for at least the same reasons as claim 11 is allowable, claim 12 is also allowable. Claim 13 depends from claim 12 and is therefore allowable for at least the same reasons as claim 12 is allowable.

New claims 14-27 ultimately depend from claim 11 and are therefore allowable for at least the same reasons as claim 11 is allowable.

Additionally claim 14 recites that the intermediate data is one of texture data and shape data. It is respectfully submitted that Wood does not disclose or suggest this feature, and therefore, for at least this additional reason claim 14 is allowable.

Claim 15 recites that the primitive parameters includes at least one of two-dimensional polygon vertex information, z information, and brightness information. It is respectfully submitted that Wood does not disclose or suggest this feature, and therefore, for at least this additional reason claim 15 is allowable.

Claim 16 recites that the pixel information includes at least one of pixel coordinates, a z value, a brightness, and texture coordinates. It is respectfully submitted that Wood does not disclose or suggest this feature, and therefore, for at least this additional reason claim 16 is allowable.

Claim 17 recites that the pixel information is determined by linear interpolation. It is respectfully submitted that Wood does not disclose or suggest this feature, and therefore, for at least this additional reason claim 17 is allowable.


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In view of the amendments and remarks set forth above, Applicants respectfully submit that this application is in condition for allowance, which action is respectfully requested.

However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,

  
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